

Meta-alunogen

$\text{Al}_4(\text{SO}_4)_6 \cdot 27\text{H}_2\text{O}$

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Crystal Data: Orthorhombic (synthetic). *Point Group:* n.d. Typically in fibrous tangled masses and efflorescences, or cracked massive, altered from alunogen.

Physical Properties: *Cleavage:* Perfect on {010}. *Hardness* = n.d. *D(meas.)* = n.d. *D(calc.)* = [2.85]

Optical Properties: Semitransparent. *Color:* White, pale yellow; colorless in transmitted light. *Luster:* Waxy to pearly.

Optical Class: Biaxial (+). *Orientation:* $X \perp b$. $\alpha = 1.469$ $\beta = 1.473$ $\gamma = 1.491$

2V(meas.) = Large.

Cell Data: *Space Group:* n.d. $a = 12.25$ $b = 13.95$ $c = 15.95$ $Z = 4$

X-ray Powder Pattern: Synthetic.

4.071 (100), 12.20 (26), 6.114 (11), 3.860 (9), 4.208 (7), 3.990 (5), 3.024 (4)

Chemistry:

	(1)	(2)
SO_3	41.04	41.03
Al_2O_3	17.33	17.42
H_2O	41.44	41.55
Total	99.81	100.00

(1) Francisco de Vergara, Chile. (2) $\text{Al}_4(\text{SO}_4)_6 \cdot 27\text{H}_2\text{O}$.

Occurrence: An uncommon mineral formed by dehydration of alunogen; found in sulfate-rich hydrothermal deposits and geothermal fields.

Association: Alunogen, pickeringite, halotrichite, mirabilite, kalinite, gypsum.

Distribution: From alum mines 3.5 km south of Francisco de Vergara, Antofagasta, Chile. In Ruatapu Cave and within the Te Kopia geothermal field, Taupo Volcanic Zone, New Zealand.

Name: For *meta*, indicating a lower hydrate, and *alunogen*.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 539–540, 537–539 [alunogen, part]. (2) Náráy-Szabó, I (1969) Über die hydrate des Aluminiumsulfats. Acta Chimica Academiae Scientiarum Hungaricae, 60(1–2), 27–36 (in German).